

IN THE UNITED STATES BANKRUPTCY COURT
FOR THE DISTRICT OF DELAWARE

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In re:	: Chapter 11
	: Case No. 01-01139(JKF)
	:
W. R. GRACE & CO., et al.,	: (Jointly Administered)
	:
Debtors.	:
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**OFFICIAL COMMITTEE OF EQUITY SECURITY
HOLDERS' MEMORANDUM IN SUPPORT OF DEBTORS'
MOTION TO EXCLUDE CERTAIN EXPERT OPINIONS RELATING TO
CURRENT AND FUTURE ASBESTOS PERSONAL INJURY LIABILITY**

The Official Committee of Equity Security Holders (the "Equity Committee") of W.R. Grace & Co. ("Grace") submits this memorandum in support of Grace's Motion to Exclude Expert Opinions in Connection with the Estimation of its Current and Future Asbestos Personal Injury Liability (the "Grace Motion").

Preliminary Statement

"*Daubert* explains that the language of Rule 702 requiring the expert to testify to *scientific knowledge* means that the expert's opinion must be based on the 'methods and procedures of science' rather than 'subjective belief or unsupported speculation.'"¹

The Equity Committee applauds and joins the Grace Motion in its entirety. Through the Grace Motion, Grace has for the first time brought logic and clear thinking to the historically muddled issue of estimating asbestos personal injury liabilities for purposes of bankruptcy reorganization. In particular, new light has been cast upon two pivotal questions: (1) *what* should the Court be estimating?; and (2) *what methods* should

¹ *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 742 (3d Cir. 1994) (quoting *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) (emphasis in original)).

the Court accept as competent evidence in making that estimation? Grace's memorandum is comprehensive, and the Equity Committee does not wish to subject the Court to undo repetition. We therefore write separately only to make some brief observations pertinent to these two points.²

The Equity Committee represents the innumerable holders of more than 70 million shares of common stock of Grace. Grace stock is publicly traded and highly liquid, with average daily volume of more than 900,000 shares. At the current market price of about \$26 (the price has ranged between \$24 and \$30 over the past three months), the market capitalization of Grace's equity is more than \$1.8 billion. If there is any truth to market efficiency and the "wisdom of the crowd" – and there assuredly is – there can be no question about Grace's solvency. *See VFB LLC v. Campbell Soup Co.*, 482 F.3d 624, 633 (absent evidence of market distortion, market value of equity is the best evidence of solvency). Every day, hundreds of people make investments expressing their confidence that Grace's assets massively exceed its liabilities, including Grace's aggregate exposure for present and future asbestos personal injury liabilities.

Each dollar included in the Court's estimation of Grace's asbestos personal injury liabilities comes out of the equity holders' pockets. To the extent that the liabilities are real, legitimate obligations of the company, this is as it should be. Evidence presented to the Court in the forthcoming estimation trial will demonstrate that, as a matter of logic and epidemiological science, the number of individuals who could realistically have developed true asbestos-related disease from Grace products is diminishingly small.

² The Revised and Amended Case Management Order of the Estimation of Asbestos Personal Injury Liabilities allows the Equity Committee's memorandum to be 40 pages long; however, this memorandum is only 13 pages long. The Equity Committee has agreed to allow the Debtors to make use of the remaining 27 pages for the Grace Motion.

While the equity holders fully understand the requirement that they bear the economic burden resulting from legitimate asbestos-related liability, the estimated liability should be consistent with this reality.

However, value should not, and must not, be taken away from Grace shareholders on the basis of the sort of arbitrary, wholly unscientific and result-oriented extrapolations by the claimants' purported experts, based on historical settlements that were entered into under the duress of the unmanageable pressures of a litigation system out of control. These settlements invariably stated on their terms that no liability was being admitted and include a vast number settlements of claims that were, it is now clear, legally meritless.

Thus, the Equity Committee respectfully submits that the answers to each of the two questions posed above are clear. *First*, the Court should estimate Grace's *real* liability on *legitimate* claims of asbestos-related injury *caused by Grace product*. To do otherwise, to blink reality by engaging in the claimants' chimerical enterprise of guessing what would have happened in a fictitious world "but for the bankruptcy," would merely perpetuate the unprincipled shakedown from which Grace entered bankruptcy to seek protection.

Second, in making its estimation the Court should rely only upon *legitimate and scientifically defensible* methods, a standard that claimants' estimation experts – in particular, Dr. Peterson and Ms. Biggs -- utterly fail to satisfy. To illuminate the numerous scientific shortcomings of these purported experts, the Equity Committee has obtained the expert report of Dr. James Heckman, a Nobel laureate economist who has devoted his career to studying and improving scientific methods for modelling human behavior. (The "Heckman Report," a copy of which is attached as Exhibit 1.)

Having analyzed Dr. Peterson's and Ms. Biggs' estimation reports in detail, Dr. Heckman concludes that neither has "use[d] a reliable methodology." Rather, both "employ simple extrapolation of trends and *ad hoc* adjustments," which do "not meet the criteria of the scientific method." (Heckman Report ¶8). That Dr. Peterson and Ms. Biggs disagree between themselves by \$2 billion (a variance of more than 50%) alone speaks volumes. Their estimates are meaningless numbers supported by "subjective belief [and] unsupported speculation." *Daubert v. Merrill Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 590 (1993). Such estimates should not be the basis for taking billions of dollars away from Grace's stockholders.

I.

The Court Should Estimate the Value of Legally Meritorious Claims, Not What Grace Would Supposedly Have Paid to Settle Claims -- Meritorious and Otherwise -- in a Fictitious "But For the Bankruptcy" World

Grace filed for Chapter 11 bankruptcy protection on April 2, 2001. That historical fact can never be altered. Yet both of the claimants' estimations are predicated entirely upon the counterfactual assumption that the Grace bankruptcy petition *never occurred*. This "but for the bankruptcy" assumption is not the result of any expert opinion; rather it is an integral aspect of the sole question that claimants' counsel chose to put to its experts. *See, e.g.*, Peterson Dep. at 267 ("It's a legal argument."). As explained in the Grace Motion, this question is wrong as a matter of law. The claimants' experts therefore fail the "fit" prong of the *Daubert* test. We further note that, by design, the claimants' experts' specific application of the "but for the bankruptcy" assumption leads to palpably absurd results.

The sole and express reason for the bankruptcy filing was Grace's inability to achieve fair resolution of the flood of asbestos claims being asserted against it in state

courts. “We believe that the state court system for dealing with asbestos claims is broken, and that Grace cannot effectively defend itself against unmeritorious claims.” April 2, 2001, Press Release (quoting Grace Chairman Paul J. Norris). Subsequent events have entirely vindicated both aspects of this assertion. The state court system has been shown to be in fact broken, as legislatures and courts have recognized in a continuing series of tort reform measures. Moreover, a vast portion of the claims against Grace (and other defendants) were unmeritorious, the product of disreputable mass screenings and usually supported entirely by diagnoses from a small group of doctors who have now been utterly discredited, most notoriously by Judge Janice Jack in the Silica Multidistrict litigation. There is no need to recount of these facts at length, most of which are well known to the Court and will be explored at trial. It will suffice to observe that even Dr. Peterson and Ms. Biggs acknowledge that, through these events, the asbestos litigation environment has been fundamentally changed since the date of Grace’s bankruptcy petition. *See, e.g.*, Mark A. Peterson, W.R. Grace Projected Liabilities for Asbestos Personal Injury Claims as of April 2001 (the “Peterson Report”) at 12; Jennifer L. Biggs, Expert Estimation of Asbestos Personal Injury Liabilities of W.R. Grace as of April 2, 2001, Supplemental Report (“the Biggs Supp. Report”), at 17, 61.

Grace was thus completely justified in seeking bankruptcy protection from the massive losses it was suffering from the unrelenting flood of *claims* being asserted against it in a broken legal system, and seeking a fair resolution of its legitimate asbestos-related *liabilities* in an orderly process through the Court. The claimants “but for the bankruptcy” assumption would directly deprive Grace of this very benefit, by guessing what would have happened if Grace had continued in the broken system. This approach

would render the bankruptcy process meaningless, with startlingly inequitable implications.

For example, Ms. Biggs' estimation assigns value to a host of claims that by her own analysis lack merit. Imagine that a company files for bankruptcy the day before trial is to commence on a seemingly powerful multimillion dollar lawsuit against it. A year later, evidence is uncovered demonstrating that the claim was fraudulent, and based upon forged documents. But the plaintiff persists, arguing that because Bankruptcy Code § 502(b) requires that its claim be valued "as of the date of the filing of the petition date," the exculpatory evidence not available until after the petition date must be ignored. The contention would obviously be absurd.

The "but for the bankruptcy" assumption leads Ms. Biggs to take precisely the same palpably absurd position. Ms. Biggs admits that "scrutiny of claims originating from mass screening activities has shown that many of the B-readings are suspect," and concludes that the exposure of these practices will lead to a "significantly higher dismissal rate" for non-malignant claims against Grace going forward. Biggs Supp. Report at 61. But she nonetheless applies Grace's historical dismissal rate to the claims she believes *would have* been settled through 2003, reasoning that, if Grace had not filed for bankruptcy, it would have continued to pay on bogus claims until "increased scrutiny of mass screening activities" in 2004. *Id.* at 61.³ Ms. Biggs' estimate thus attributes value to thousands of meritless claims that she thinks Grace would have been forced to settle, "but for the bankruptcy," before the true nature of these claims came to light.

³ Specifically, Ms. Biggs assumes that Grace would have paid to settle more than 80% of the nonmalignant claims resolved before 2004, but barely one-third of such claims resolved thereafter. Biggs Supp. Report at 62, Table 17.

Dr. Peterson, by contrast, applies a decreased “payment rate” (i.e., an increased dismissal rate) to all claims resolved after the Petition Date. Peterson Report at 21. But his application of the “but for” assumption has other, equally unjustifiable implications. Among other things, Dr. Peterson is oddly selective about which bankruptcy he assumes out of existence: his “but for” world entirely excludes the Grace bankruptcy, but expressly includes – and places great weight upon -- the bankruptcy of other asbestos defendants. In Dr. Peterson’s view, the prospect of bankruptcy filings by other major asbestos defendants causes an increase in both the number of claims filed against Grace and the value of claims. *See, e.g.*, Peterson Report at 25-26; Peterson Dep. at 268-69. On this basis Dr. Peterson increases his liability estimate for Grace. In similar fashion, Dr. Peterson has used the fact of Grace’s bankruptcy to increase his asbestos liability estimates in other bankruptcies, such as Owens Corning. Peterson Dep. at 271. Thus, through Dr. Peterson’s selective interpretation of the “but for” assumption, every defendant’s liability is increased by the bankruptcy (or potential bankruptcy) of every other defendant. The aggregate liability of all asbestos manufacturers is thereby magically increased through the bankruptcy process, a result that makes no logical sense -- but has obvious benefits for the asbestos committees that repeatedly hire Dr. Peterson.

II.

Dr. Peterson’s and Ms. Biggs’s Estimations Are the Product of Arbitrary Judgments, “Speculative Belief” and “Unsupported Speculation”, Not Defensible “Methods and Procedures of Science” as Required by *Daubert*

The estimation exercises of Dr. Peterson and Ms. Biggs are the result of two distinct elements: (1) predictions about medical processes that will lead to future occurrences of asbestos-related diseases, and (2) predictions about human behavior, including decisions to bring claims against Grace (legitimate or otherwise), whether to

settle such claims, and for how much. The former task is a matter of epidemiology, which is not within either of these individuals' areas of expertise but is not a major area of controversy in this case. The latter, far more important human volitional element is a matter of economics. *See* Heckman Report at 7 (“Methods for predictions of outcomes that are based on decision-making at individual and organizational levels and interactions among these participants are at the heart of economic science.”).

It would be difficult to imagine anyone more qualified to speak to this topic than James Heckman. Dr. Heckman is one of the world's foremost experts on the methods for modelling and predicting human behavior. In the words of the Nobel Prize Committee, Dr. Heckman (and his co-award winner Daniel McFadden) has developed methods that “are now standard tools, not only among economists but also among other social scientists.” *See* http://nobelprize.org/nobel_prizes/economics/laureates/2000/press.html, attached as Exhibit 2. Dr. Heckman's detailed critique of the work of Dr. Peterson and Ms. Biggs is set forth in his attached expert report, and need not be repeated here in their entirety. We touch only upon a few salient points.

Science is the enterprise of *understanding* what is going on in the world, and *applying* that understanding for practical purposes. At the heart of the scientific endeavor is “the formulation of hypotheses as to causes and effects and the testing of these hypotheses against empirical evidence.” Heckman Report ¶ 11. To merely describe what has happened, or to assume that what has happened in the past will continue into the future, is not science. Nor is it science to adjust extrapolations from history on the basis of off-hand and unsupported “judgments” – even “informed judgments” – that are not the product of any articulated and tested method. *Daubert*, 509 U.S. at 590. For all of their

charts and tables, Dr. Peterson and Ms. Biggs offer nothing to the Court beyond “simple extrapolation of trends and *ad hoc* adjustments.” *Id.* at 5.

Dr. Heckman charitably observes that there are situations where decisions may reliably be made on the basis of the simplistic assumption that the future will continue to be like the past. This is so where the environment is so stable that it is not necessary to understand the underlying dynamics of cause and effect, because they do not change. For example, if one lives in the tropics where the weather never changes, there is no need to understand the complex meteorological factors at play to reliably predict what the weather will tomorrow: same as today. This is not science, though, and offers no help in making predictions in a dynamic environment where important factors are changing. *See, e.g.,* Heckman Report ¶¶ 20, 34.

Beyond question, the asbestos litigation environment is highly dynamic. Developments of recent years have effected fundamental shifts, with more undoubtedly to come. Dr. Peterson and Ms. Biggs acknowledge as much, purporting to address the impact of these fundamental changes through sizeable adjustments that, though undoubtedly correct as to direction (tending to reduce their estimates), lack any methodological justification. *See generally* Heckman Report ¶¶ 65-74, 83-86. “[T]o be reliable, expert testimony must be based on sufficient facts or data and it must be the product of reliable principles and methods properly applied.” *Lippe v. Bairnco Corp.*, 288 B.R. 678, 686 (S.D.N.Y. 2003). The size of Dr. Peterson’s and Ms. Biggs’ *ad hoc* adjustments, and how they were applied (*e.g.*, Will tort reform result in decreased filing rates, or increased dismissal rates, or both? How will settlement values be affected? When will these impacts occur?), are not the result of any systematic analysis or

calculation; they are pure speculation. Even Dr. Peterson concedes that “some of these adjustments, while informed by the research that I’ve done, are not, themselves, scientific decisions.” Peterson Dep. at 248.

Furthermore, before applying their arbitrary adjustments Dr. Peterson and Ms. Biggs do *not* simply assume that the future will simply be like the past. Instead, both of their estimates are dramatically increased by projecting that future settlement values will rise, on the basis of purported historical “trends” they assume will continue. *See, e.g.*, Peterson Report at 34; Biggs Supp. Report at 63-67. These extrapolated trends are not the basis of any empirically established relationship of cause and effect, and hence lack any scientific justification.

In technical terms, a “trend” is a monotonic relationship between time and an observed variable. A historical trend is merely an observation that in the past the variable – here, average settlement values – has tended to move in a certain direction and calculating the average rate of that movement. *See* Peterson Dep. at 246, 248-49. This is not science, it is measurement. Absent plausible and empirically tested hypotheses as to *why* time would cause the variable to increase, there is no basis to expect the historical trend to continue. For example, someone observing a baseball leaving a bat at a 45% upward angle will observe that the height increases -- for a while. This observation establishes a historical trend, but the trend tells absolutely nothing about cause and effect. Time does not cause the ball to rise, the force initially imparted does, and there are other factors (friction, gravity) at work. Without an analytical model of cause and effect, the historical trend is useless in predicting the ball’s future position – indeed, worse than useless, it is positively misleading. Similarly, one might observe the amount of coal

being removed from a mine increasing over time, but this historical trend would be the result of numerous underlying forces. Without understanding and quantifying those forces, the trend is no basis for reliably predicting the future output of the mine. The only thing one can say for certain is that a simple forward projection of the trend will be wrong: the mine will be exhausted.

The fact that settlement values generally (although by no means exclusively) increased in the years prior to the Grace bankruptcy filing that gives no insight into cause and effect – it tells one nothing about *why* those values increased – and therefore provides no basis whatsoever to predict what will happen in the future. Neither Dr. Peterson nor Ms. Biggs has even attempted to build an analytical model of the causes underlying their observed historical data, and to test that model on the data.

When asked whether he had any hypothesis as to why time would result in an increase in settlement values, Dr. Peterson appeared to be considering the question for the first time. He began to spin theories about increasing “public knowledge about asbestos,” “more trial lawyers around than there were before,” and “the increase in skill” of the plaintiffs’ bar – and then admitted that there are similar factors that would tend to decrease settlement amounts, such as tort reform and increasing publicity about suspect claims practices. Peterson Dép. at 250-53. By identifying this non-exhaustive panoply of factors, Dr. Peterson tacitly admits that the notion of a unitary “trend” is simplistic and useless. There is no single force moving settlement values upward over time. Instead, there are many factors tending in different directions, the strength of which will vary over time. It is difficult to imagine, for example, that the already substantial public knowledge about the dangers of asbestos could continue to increase; on the other hand, information

about the extent of suspect claims practices and plaintiff abuses of the tort system is only beginning to come to light.

In his report, Dr. Heckman explains that a scientifically valid forecast of future asbestos liabilities in the tort system requires the creation of a model identifying at least the major factors at play and making hypotheses about the cause and effect relationships. “The next step is then to empirically specify and test the model with data to validate and quantify the hypothesized relationships.” Heckman Report ¶ 11. Once these empirically tested relationships are established, informative predictions can be made about the future – and, importantly, the range of error of the forecast can be quantified. *Id.* ¶ 71; *see Daubert*, 509 U.S. at 594 (noting that “the court should ordinarily consider the known or potential rate of error” in considering admissibility of expert testimony).

In his deposition testimony described above unpacking what he believed might underlie the historical “trend” in settlement values, Dr. Peterson demonstrated that he would have no trouble identifying the factors that should be incorporated into a true model of asbestos claiming behavior. Peterson Dep. at 250-53. A review of such factors is merely the starting point for a scientifically valid estimation. As Dr. Heckman explains,

The[] complexities and underlying interrelationships among the outcomes that determine Grace’s future asbestos claims and claim values make the development of reliable forecasts a challenging but not insuperable task. Armed with modern econometric tools and powerful computing capabilities, economists have formulated and estimated models of comparable complexity. These models are regularly applied to policy decision-making that affects tax policy and the like.

Heckman Report ¶ 36; *see also id.* Appendix B (describing examples of such models).

Neither Dr. Peterson nor Ms. Biggs, nor any other expert put forward by claimants, has

even attempted to create such a scientifically defensible model for predicting Grace's future asbestos personal injury liability.

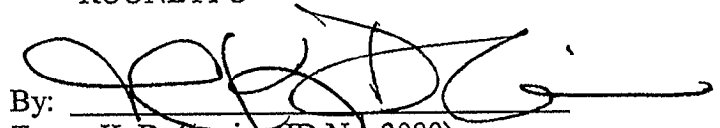
Conclusion

For the reasons set forth above, as well as the reasons set forth in Grace's memorandum, Grace's *Daubert* motion should be granted.

Dated: December 7, 2007

Respectfully submitted,

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Exhibit 1

**Rebuttal Report of
James J. Heckman
to the Reports of Mark A. Peterson
and Jennifer L. Biggs**

September 25, 2007

I. INTRODUCTION

A. Qualifications

1. I am the Henry Schultz Distinguished Service Professor of Economics in the Department of Economics at the University of Chicago. I also have part-time appointments at University College Dublin and Peking University, China. I have served on the faculties of the Department of Economics at Columbia University and Yale University, where I was the A. Whitney Griswold Professor of Economics. I received my B.A. (summa cum laude) in mathematics from Colorado College in 1965 and my M.A. and Ph.D. in economics from Princeton University in 1968 and 1971, respectively.

2. I specialize in the fields of Labor Economics, Applied Microeconomics and Econometrics, which is the application of statistical techniques to economic problems. In 1983, I received the John Bates Clark Medal awarded biannually by the American Economics Association to the most distinguished economist under the age of 40. In 2000, I was awarded the Nobel Prize in Economics. I am a Member of the National Academy of Sciences, a Fellow of the American Academy of Arts and Sciences, a Fellow of the Econometric Society, a Fellow of the American Statistical Association, a Fellow of the Society of Labor Economics, and a Senior Research Fellow of the American Bar Foundation. I also am a Research Associate of the National Bureau of Economic Research and I direct the Economics Research Center at the Department of Economics at the University of Chicago. I also direct the Center for Social Program Evaluation at the Harris School at the University of Chicago.

3. I have published over two hundred articles in scholarly journals and compendia and have written or edited five books. I currently serve as an Associate Editor of the Journal of Labor Economics, Econometric Reviews, and the Journal of Population Economics. I have previously served as Co-Editor of the Journal of Political Economy and as an Associate Editor of Evaluation Review, the Journal of Econometrics, the Review of Economic Studies and the Journal of Economic Perspectives. In addition to my academic experience, I have served as an advisor to the World Bank, the Inter American Development Bank, the United States Department of Labor, and the Ministry of Fiscal Equity of Argentina, and government agencies in Brazil, Taiwan, South Korea, Germany, Scotland and Ireland. I also have presented testimony before committees of the United States Congress. In the past four years, I have offered expert testimony in *Blue Cross and Blue Shield of New Jersey, et al. v. Philip Morris, Inc., Falise, et al. v. American Tobacco Co., et al.* and *United States v. Philip Morris, et al.* A copy of my curriculum vitae is attached as Exhibit A to this report. A list of materials considered is included as Exhibit B. I am being compensated at the rate of \$1800 per hour.

4. The central issue addressed by Dr. Peterson and Ms. Biggs in this matter is the estimation of future asbestos-related claims and claim values faced by Grace. At the heart of this issue is human choice – choices by individuals and plaintiffs law firms to file and settle claims and choices by defendant firms in response to these behaviors. Economists have long studied and modeled the factors driving human choices – at various levels of human organization – e.g., individual and firm levels, and have developed accepted methods for the statistical analysis of economic data. This field is generally referred to as econometrics. In fact, a focal point of my work has been the development of scientific bases for policy evaluation, applying sound economics and econometric methodology to the study of human choice. I have studied outcomes

produced by human behavior in a number of different areas, and have analyzed the implication of changes in factors driving choice (e.g. incentives, costs) for predictions of future outcomes.¹ My work has placed special emphasis on models of individuals (or disaggregated groups, such as organizations or firms), and the problems and possibilities created by heterogeneity, diversity, and unobserved counterfactual states.

5. This vast and growing econometric literature has focused on developing tools, grounded in scientific methods, to identify relationships that can be used to make reliable forecasts in changing environments. This literature emerged in response to recognized shortcomings in forecasting techniques, specifically those techniques that naively extrapolate from simple historical relationships among variables. These simple extrapolation techniques have led to many recognized failures in reliable predictions and subsequent policies based on those predictions. These failures have been observed in stock market predictions, regulation of monetary supply, predictions of the effects of educational policies, and a host of other programs designed to promote equality and economic prosperity. The evaluation and development of predictive approaches and their application to policy analysis have been the central focus of my research.

B. Summary of Tasks and Conclusions

6. I have been asked by counsel for W.R. Grace's Equity Committee to evaluate the reliability of the methodology and estimates presented by Dr. Mark A. Peterson in his Report of June 2007 ("Peterson Report") and Ms. Jennifer Biggs in her report of June 2007 ("Biggs Report"). In their reports, Dr. Peterson and Ms. Biggs attempt to estimate W.R. Grace's ("Grace's") future asbestos-related liabilities, assuming a counter-factual, "but-for" world in which Grace had not entered bankruptcy. I understand that liability is

¹ For example, see Heckman and Ashenfelter "Measuring the Effect of an Anti-Discrimination Program" (1974); Heckman "Shadow Prices, Market Wages and Labor Supply" (1974); and Heckman, Lochner and Taber "Tax Policy and Human-Capital Formation" (1998).

a legal finding, based on various elements including causation and incidence of harm, which neither Dr. Peterson nor Ms. Biggs incorporate into their estimation. Instead, Dr. Peterson and Ms. Biggs both claim to estimate Grace's future asbestos liabilities by forecasting potential claims and settlement values under the assumption that these claims would be resolved under the tort system.²

7. I have been asked to assess whether Dr. Peterson's and Ms. Biggs' forecasting approaches are reliable and apply valid scientific methods for analyzing past and projecting future claiming behavior.

8. Based on my analyses and review of materials related to this case, I have drawn the following central conclusions:

- i. Dr. Peterson and Ms. Biggs do not use a reliable methodology to estimate future claim levels and future claim values that would have been filed and resolved in the tort system but for the Grace bankruptcy.
- ii. Reliable forecasts of future asbestos claims and settlement values in a changing environment require modeling of the economic incentives driving individual choices (e.g. decision to bring a claim) and firm behavior (e.g., litigation strategy). There is a well-established econometric framework, based on the scientific method, for performing this type of analysis.
- iii. Instead, Dr. Peterson and Ms. Biggs employ simple extrapolation of trends and *ad hoc* adjustments.
 - Simple extrapolation does not meet the criteria of the scientific method, although it can provide informative estimates of outcomes in instances where processes follow well-established trends that are likely to persist into the future.
 - Dr. Peterson's and Ms. Biggs' estimation techniques do not meet the criteria of the scientific method, and whether their estimates provide any information hinges on the stability of the processes that determine these different outcomes over time.

² See Peterson Report, p. 9 and Biggs Report, p. 5.

- There have been well-documented changes in the asbestos-related litigation environment. Therefore, Dr. Peterson's and Ms. Biggs' simple extrapolations provide no reliable basis for principled analysis of future claims.
- iv. Further, even if Dr. Peterson's and Ms. Biggs' approaches could reliably estimate future claims and settlement values in a tort system but for the bankruptcy, which I do not think they do, their methods do not translate into reliable estimates of the number and value of claims resolved under a bankruptcy regime, which I understand may apply to these estimates.
- I have been told by counsel to assume that the legal standards that will be applied to resolve asbestos claims in the context of bankruptcy are significantly different than the legal standards in the tort system but for the bankruptcy.
 - Observed past settlements that were resolved under the tort system, were a function of participants' strategic behavior under the substantive and procedural rules of the many different courts in which claims were and could be brought.
 - Therefore, even if Dr. Peterson's and Ms. Biggs' forecasting methodologies could provide informative estimates of Grace's likely future claims and settlement values but for the bankruptcy, these estimates would not be likely outcomes under the bankruptcy regime.

9. In sum, Dr. Peterson's and Ms. Biggs' approaches do not follow scientific or any reliable methodology for forecasting outcomes in changing environments. Therefore, Dr. Peterson's and Ms. Biggs' estimation approaches do not provide a basis from which to draw informative measures of Grace's future asbestos-related liabilities or future claims and settlement values.

II. PREDICTION OF OUTCOMES THAT DEPEND ON HUMAN CHOICES UNDER CHANGING INCENTIVES IS A CENTRAL AREA IN APPLIED ECONOMICS

10. Dr. Peterson and Ms. Biggs attempt to predict the level of Grace's future asbestos-related claims and claim values. The ultimate levels of these outcomes depend on a host of factors, including the choices that are made by claimants and defendants under specific legal regimes. Prediction of these future outcomes using scientific methods involves identifying the causal relationships between these different factors (such as particular legal requirements) that affect economic incentives and future choices.

11. Methods for predictions of outcomes that are based on decision-making at individual and organizational levels and interactions among these participants are at the heart of economic science. The empirical scientific method calls for the formulation of hypotheses as to causes and effects and the testing of these hypotheses against empirical evidence. Thus, to develop a valid empirical economic model, the first step would be to consider potential relationships among the main economic variables of interest. The next step is then to empirically specify and test the model with data to validate and quantify the hypothesized relationships.

12. By failing to specify or estimate such an economic model, or even provide any indication of a model of decision making that underlies their empirical approach, neither Dr. Peterson nor Ms. Biggs meet the basic standard of empirical science as applied to economic problems. The fundamental methodological requirements for valid economic forecasting were articulated by Haavelmo more than sixty years ago and have been

refined by many researchers since.³ Instead of applying this body of knowledge, Dr. Peterson and Ms. Biggs simply extrapolate from a set of historical patterns onto future outcomes in an *ad hoc* fashion with no articulated economic rationale.

13. The econometric approach to forecasting develops explicit models of outcomes where the causes of effects are investigated and the mechanisms governing choices are analyzed. The variables that economists generally seek to predict are known as the “choice” or “endogenous” variables in an economic model. They are sometimes called “internal” variables because they are determined by the social system. In particular, the discipline of applied econometrics focuses on explaining and predicting outcomes that are determined by economic participants’ choices. In the model of Grace’s future claims and claim values, the main endogenous outcomes (i.e., the ones determined by participant choices) are decisions whether to bring or settle claims, settlement values, and case dismissals.

14. Econometric work over the last several decades has focused on organizing and analyzing large datasets that provide an empirical basis to link these multiple interrelated causal factors to the choice-based outcomes. While the basic statistical theory to implement these types of tests has existed for many decades, the advent of computer technology has led to the collection of large datasets and the use of more sophisticated empirical techniques. These developments have dramatically advanced the ability to model outcomes that are driven by multiple causal factors, such as asbestos-related claiming behavior.

³ See Haavelmo “The Probability Approach in Econometrics” (1944). For a discussion of recent literature on this topic, see Heckman and Vytlaçil “Structural Equations, Treatment, Effects and Econometric Policy Evaluation” (2005).

15. Reliable predictions of outcomes are generated by using carefully estimated models and accounting for any anticipated changes in the relevant factors. The model and resulting estimates also should be scientifically tested for reliability by determining the sensitivity of the estimates when explicit assumptions of the model are varied. The predicted outcomes of this econometric model, developed and tested using scientific methodology, can then be considered to be reliable, as its predictions would be robust and reliable.

16. Estimates of asbestos-related claims and claim values rest on individual decisions, most importantly the decisions whether to bring a claim against a defendant at all, whether to settle the claim, and at what value -- as well as defendants' corresponding decisions. These choices will be controlled by numerous factors influencing the incentives and costs of each course of action. Accordingly, a reliable econometric model used to predict the number and value of Grace's future asbestos-related claims must consider and account for the numerous factors controlling economic incentives to file and settle claims, such as the value of expected settlement payouts, company solvency, and medical documentation standards.

17. Additionally, each of these individual factors in turn will depend on a number of underlying inputs. For example, expected tort settlement payouts can depend on inputs such as the claimant's disease, evidence of exposure and product identification, venue where the claim was filed, conduct of the defendant, the laws governing the claim as well as the defendant's and plaintiff's expectations regarding the cost and success of litigation. Similarly, an individual's decision whether or not to file a claim can depend on the onset

of disease, the full cost of bringing a claim and the expected outcomes of settlement and litigation (which in turn depend on the tort settlement values described above).

18. A scientific approach to building a reliable forecast on the endogenous variables driving Grace's future claims and settlement values under the tort system would indicate both how these endogenous variables affect one another and how each is affected by "exogenous" / "externally-specified" factors (i.e. variables which determine the endogenous outcomes but are themselves determined outside the model). For example, the incidence of disease would be an exogenous variable because it is a function of biological processes, not choice.

III. DR. PETERSON DOES NOT EMPLOY A RELIABLE EMPIRICAL OR THEORETICAL METHODOLOGY TO ESTIMATE THE NUMBER AND VALUE OF GRACE'S FUTURE ASBESTOS-RELATED CLAIMS

19. Dr. Peterson's estimates of Grace's future claims and claim values are derived from methods that impose specific assumptions on patterns of the future values that he is attempting to estimate. These assumptions on patterns are based only on simple extrapolation of recent trends in settlement outcomes, calibrations based on unjustified benchmarks, and imposed relationships between epidemiological outcomes and human behavior.

20. Dr. Peterson's simplistic estimation approach ignores the significant possibility that current outcomes and recent trends in these Grace data may not accurately reflect future behavior. Under a changing environment, reliably forecasting outcomes involves understanding the factors that drive (and how they drive) these outcomes, since these factors will differ in the future. For asbestos-related settlements, many environmental

factors that influence claimants' and defendants' strategic behavior, and hence the number and value of Grace's future claims, are known to be changing.

21. Further, Dr. Peterson employs benchmarks to predict Grace's future average settlement values using current value metrics derived from other companies and trusts, without establishing either the current or future validity of these comparisons with respect to Grace. Understanding relationships between factors and outcomes is a fundamental aspect of careful econometric forecasting, as it provides a basis from which to select appropriate benchmarks.

22. In sum, Dr. Peterson's naive extrapolation method is unreliable because he fails to account for how changing environmental factors or characteristics unique to Grace may influence future asbestos-related litigation outcomes. Consequently, Dr. Peterson's empirical approach not only fails to meet scientific criteria for developing forecasts but also ignores well-established methods for predicting outcomes that are driven by human choices. I expand on these observations below.

A. Overview of Dr. Peterson's Estimation Approach

23. Dr. Peterson predicts the number of claims in future years and the average value of these claims (by disease type). The time-series of these predicted values are used to predict the number and value of claims for particular years (by simply multiplying these two numbers for that year after adjusting for a theoretical percentage of claims that would be dismissed). The approaches he uses for estimating the number and value of claims are as follows:

1. Peterson's Method for Estimating Future Number of Claims

24. Dr. Peterson starts with Nicholson's epidemiological model projecting the incidence of asbestos-related cancers. To determine the subset of those who will bring cancer-related claims against Grace, Dr. Peterson calculates a base "propensity to sue" as the ratio of historical claims filed against Grace from 1999 to the first quarter of 2001 to cancer incidence rates for the same period.⁴ Dr. Peterson then assumes that this base propensity to sue will grow at the same rate of increase as that actually experienced by the Manville Trust from 2000 to 2006.⁵ He calculates a propensity to sue for each of the diseases separately. For years beyond 2006, Dr. Peterson assumes that the propensity to sue will stay constant at the 2006 level. Finally, he calculates the future number of claims that will be filed against Grace by multiplying these projected propensities by the corresponding disease incidence for each of the future years.

25. For nonmalignant claims levels, Dr. Peterson employs a different method. As there is no epidemiological model detailing nonmalignant incidence rates, Dr. Peterson simply assumes the percentage change in nonmalignant claims is the same rate as the percentage change in cancer incidence.⁶ I understand that this is a change in the methodology Dr. Peterson has used in previous cases, where he benchmarked non-

⁴ He also calculates an average propensity to sue during 2000-2001 (Peterson Report, pp. 70-71).

⁵ Dr. Peterson does not calculate the difference between Manville propensity to sue in 2000 and 2006, but calculates the difference between the propensity to sue in 2000 and an average propensity to sue between 2003-2006. Specifically, Dr. Peterson calculates the "rate of increase in Manville's propensities to sue for each cancer between 2000 and 2003-2006" and spreads "Manville's actual rates of increase in propensities over the 2002-2006 period for our forecast of Grace propensities to sue during 2002-2006" (Peterson Report, p. 73).

⁶ Dr. Peterson states that "we start with the level of nonmalignant claims that it received in 1999 and 2000 and then forecast that future claims will decrease at a rate parallel to the Nicholson forecast of the incidence of future asbestos-related cancers" (Peterson Report, p. 82).

malignant claims to cancer claims, as opposed to cancer incidence. As I discuss later, this approach does not appear to be based on any logical and empirically tested relationship, but rather benchmarks an outcome that depends on human choice (bringing a non-malignant claim) to an epidemiological event for a different disease (cancer).

2. Peterson's Method for Estimating the Future Claim Values

26. Dr. Peterson uses five scenarios to project Grace's average future claim values. Two of these scenarios are based on extrapolations of Grace's own historical data: 1) Short-Term Grace Ratio and 2) Long-Term Grace Regression. The other three scenarios are based on settlement values paid by "comparable" asbestos defendants – U.S. Gypsum ("USG"), Quigley and Turner & Newall ("T&N").

a) Short-Term Grace Ratio

27. Dr. Peterson calculates the 2001 base settlement value by averaging the settlement values paid by Grace during 2000 and 2001. He then assumes that this base settlement value will increase between 2001 and 2006 at an annualized rate equivalent to the historical rate of increase in average settlement values paid by Grace during the 1997-1999 period to the average paid during the 2000-2001 period.⁷ For years after 2006, his simplistic extrapolation method assumes that average settlement values will increase only at the rate of inflation.

⁷ Dr. Peterson states "For each disease we calculated the rates in increase in Grace's settlements from the 1997 to 2001 using the following formula:

$$2000-2001 \text{ average settlement} / 1997-1999 \text{ average settlement}$$

We then projected this increase forward, forecasting that by 2006 Grace would be paying in settlements the amounts that it had paid in 2000-2001 multiplied by the rate of increase that we calculated using the formula above." (Peterson Report, p. 33).

b) Long-Term Grace Regression

28. Dr. Peterson's regression is another method of simple extrapolation from Grace's own historical data. The regression equation does not attempt to model the processes that are driving the outcomes at issue. Technically speaking, he estimates a regression of log settlement values as a function of a linear time trend and state dummy variables using 1991-2001 data for each of the diseases separately, and uses the estimated trend coefficients from this regression to simply extrapolate future settlement values for 2001 through 2006.⁸ Furthermore, when extrapolating the future settlement values for 2001 through 2006, Dr. Peterson implicitly assumes that the distribution of claims across states that was observed during 1999 to 2001 will continue to hold for every future predicted year.

c) Increases Based on Other Comparable Firms

29. In this approach, Dr. Peterson calculates the average settlement value for each of the four disease categories paid by Grace during 2000 and 2001 as the 2001 base settlement value. He then uses the settlement values paid by firms he claims are "comparable" asbestos defendants – USG, Quigley and T&N – as of 2001 as a purportedly reliable basis for extrapolating Grace's settlement values from 2001 through 2006.⁹ He simply assumes that Grace's base settlement values will increase at an annualized rate such that Grace will pay, in 2006, settlement values that these "comparable" companies paid in 2001.

⁸ Peterson Report, Appendix B, page B-1.

⁹ Peterson Report, p.31.

B. Dr. Peterson's Failure to Model the Relationship Among Exogenous Factors and Endogenous Outcomes Leads to Unreliable Predictions

30. By failing to estimate, or even consider, any of the large number of relationships between the endogenous and exogenous variables that determine future claims and settlement values, Dr. Peterson's approach does not meet basic standards for making reliable predictions. In particular, Dr. Peterson acknowledges the significance of tort reform, changes in disease incidence, and changes in firms' financial conditions, yet his methods do not model or estimate the impact of these changes on future values of the outcomes he is trying to estimate.¹⁰

31. Dr. Peterson also fails to account for the interrelationships between his three main endogenous variables, each of which is likely affected by changes in the other two, another basic standard of economic science. For example, I have been advised that tort reforms may lead to caps on damages; increase injury thresholds for stating a claim; apply more rigorous standards for admission of proof of injury, causation, or product identification; or eliminate tactical devices, such as forum shopping or case consolidation. Each of these developments could affect total settlement payments in a number of ways, both directly and indirectly through feedback effects. By lowering the value of settlements that plaintiffs receive and increasing dismissal rates, tort reforms could discourage future filings and hence reduce the number of filed complaints, and limit the resources that plaintiffs' legal counsel dedicate towards litigation-related efforts, such as claims recruitment and case prosecution. Tort reforms could increase defendants'

10. He does attempt to adjust for the impact of tort reform on case dismissal rates, but provides no empirical evidence to support the adjustment he makes, and he makes no attempt to adjust for the effect of tort reform on propensity to sue or settlement values.

likelihood of prevailing through litigation (both actual and perceived) and decrease expected damage awards, thus increasing the likelihood that defendants would eschew quick settlement strategies to pursue litigated outcomes (as the downside risks would be mitigated). This in turn could increase potential claimants' perceived costs of pursuing claims, which could further reduce the likelihood of filing a claim.

32. These interrelationships imply that a change in an exogenous factor, such as tort reform, will not only have a direct effect on each of the endogenous variables, but will also have indirect effects through their feedback on one another. For example, if tort reform directly increases dismissal rates, this may reduce the likelihood to file a claim, which may in turn affect settlement values and further change dismissal rates.

33. A reliable estimation method requires an economic model to predict the "equilibrium" outcome of all these interrelated effects. Dr. Peterson's extrapolation methods, however, are based on the conglomeration of *ad hoc* sets of trends from different time periods, benchmarks from different firms, and current state variation in settlement values that may not represent future variations. Thus, Dr. Peterson provides no evidence supporting the conclusion that these methods are valid historically and no basis from which to conclude that they have any predictive power for the future.

34. Such extrapolation methods are well known to provide misleading predictions in dynamic environments. The well-known "Lucas Critique" speaks directly to the difficulty in projecting future outcomes using historical relationships among endogenous variables, or between endogenous and exogenous variables. The Royal Swedish Academy cited this critique as a basis for Dr. Robert Lucas' Nobel Prize in their October

1995 announcement, “The Scientific Contributions of Robert E. Lucas, Jr.”¹¹ In particular, Dr. Lucas contends that relationships measured under one “policy regime” can not be used to make predictions following important policy changes, unless the full impact of those policy changes is accounted for. This critique illustrates exactly why Dr. Peterson’s methodology renders his predictions unreliable. While Dr. Peterson acknowledges that there have been and continue to be major tort reforms in state courts, he fails to consider, aside from some *ad hoc* adjustments to claim dismissal rates, how these policy changes could affect any of the other trends or patterns he is measuring.

35. Dr. Peterson’s failure to account for how changes in factors underlying asbestos- related outcomes under the tort system ignores economic methods developed over 50 years ago. Since at least the early 1940’s, econometricians have understood that accurate prediction of future variables requires identification and estimation of stable economic relationships.¹² Reliable predictions cannot be based on patterns and trends that hold only at one point in time under one set of policies and exogenous factors. Rather, as mentioned above, sound predictions are based on identifying the underlying stable economic relationships, such as how individuals’ decisions to sue are determined by expected settlement values, dismissal rates, and exogenous factors and how courts’ decisions to dismiss are determined by the number of lawsuits and other factors. Using

¹¹ As the Royal Swedish Academy notes, “The ‘Lucas critique’...has received enormous attention and been completely incorporated in current thought.” The central idea of the Lucas critique traces back to Haavelmo “The Probability Approach in Econometrics” (1944) and Marschak “Economic Measurements for Policy and Prediction” (1953).

¹² See Trygve Haavelmo “The Probability Approach in Econometric,” (1944), Jacob Marschak “Economic Measurements for Policy and Prediction,” (1953). For a discussion of this issue, see Arthur Goldberger, *A Course in Econometrics*, 1991, p.343-346, James Heckman “Econometric Causality” (2007) and James Heckman “Haavelmo’s Legacy,” (2007).

these accepted econometric methods, a model would be estimated on available data. Predictions for these endogenous variables then would be based on these estimated parameters along with projected values of the key exogenous variables. Dr. Peterson takes no steps toward implementing this accepted approach.

36. These complexities and underlying interrelationships among the outcomes that determine Grace's future asbestos claims and claim values make the development of reliable forecasts a challenging but not insuperable task. Armed with modern econometric tools and powerful computing capabilities, economists have formulated and estimated models of comparable complexity. These models are regularly applied to policy decision-making that affects tax policy, education policy and the like. For some representative examples of these types of models, see Appendix B.

37. Simple extrapolation from short-run trends ignores the impact that even small changes in underlying factors can have on outcomes. Therefore, Dr. Peterson's extrapolation methods are insufficient and fail to meet basic economic criteria for sound estimation. As a result, Dr. Peterson's forecasts of Grace's future asbestos claims and claim values are unreliable and uninformative.

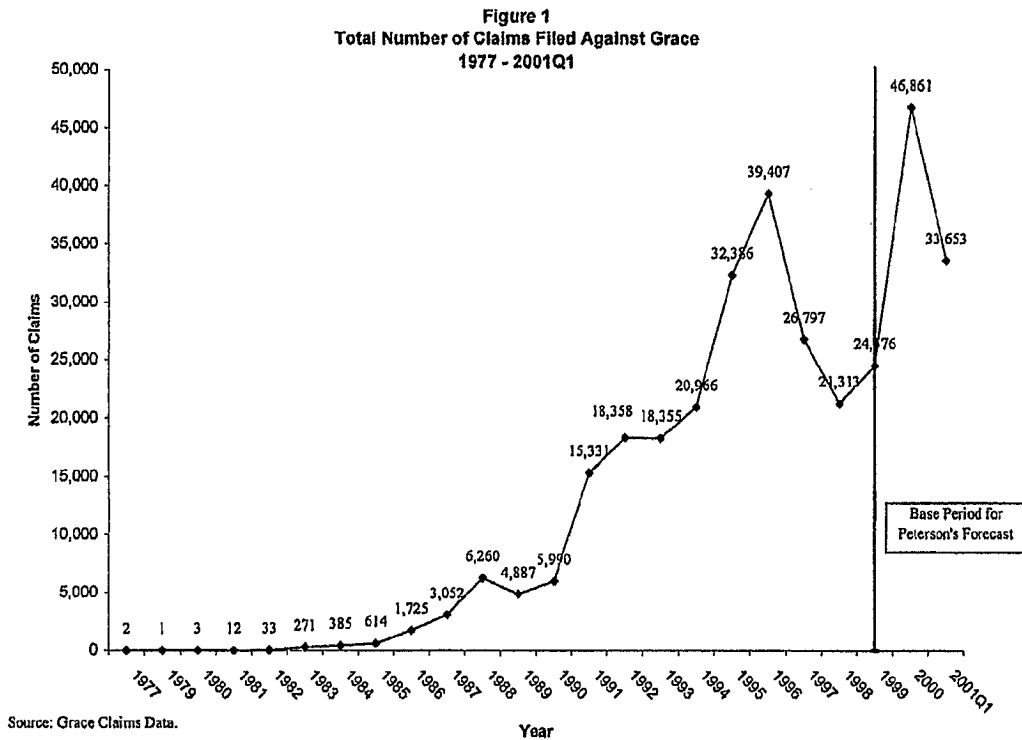
IV. DR. PETERSON'S ARBITRARY ASSUMPTIONS HIGHLIGHT THE SHORTCOMINGS OF HIS FLAWED METHODOLOGY

38. In his report, Dr. Peterson acknowledges that a simple extrapolation is insufficient for forecasting values in a world that is changing. Instead of identifying and modeling the factors that drive these changes, however, Dr. Peterson employs arbitrary assumptions and adjustments that have neither a theoretical nor an empirical basis. In

this section, I review a number of these assumptions. These assumptions are integral to Dr. Peterson's estimates – different assumptions generate different forecasts. As a result, Dr. Peterson's empirical results are sensitive - in some cases, highly sensitive- to each of the arbitrary assumptions that he makes.

A. Dr. Peterson Uses an Unusual and Arbitrary Time Period for His Extrapolation

39. The period Dr. Peterson has arbitrarily chosen as the basis for his extrapolation method appears atypical. The observed values of claims filed and average settlements paid during the time period preceding Grace's bankruptcy do not appear to follow any overall trend. This indicates that the underlying determinants driving these outcomes could be changing during this time. Dr. Peterson ignores the implications of these changes on his estimates and instead arbitrarily chooses specific time periods from which to extrapolate. His results are highly sensitive to these arbitrary choices. Additionally, Dr. Peterson's chosen period immediately preceded Grace's bankruptcy, and bankruptcies are, by definition, unusual events. (See Figure 1).



1. Dr. Peterson Chooses Arbitrary Time Spans For Forecasting His Estimates

40. Dr. Peterson uses an extrapolation method to forecast claims and settlement values and yet completely ignores substantial variations in the level of these outcomes over the 10 years in his sample. Further, he provides no evidence as to why the periods he chooses to use in his calculations are the most appropriate. Indeed, as I show below, Dr. Peterson's estimates are highly sensitive to his choice of these time periods.

41. The level of claims filed against Grace varied during the 1990's. For example, the number of cancer-related claims filed against Grace increased by 89 percent between 1998 and 2000 and the number of nonmalignant claims filed against Grace increased by 119 percent in the same period (see Table 1). In contrast, the number of cancer-related

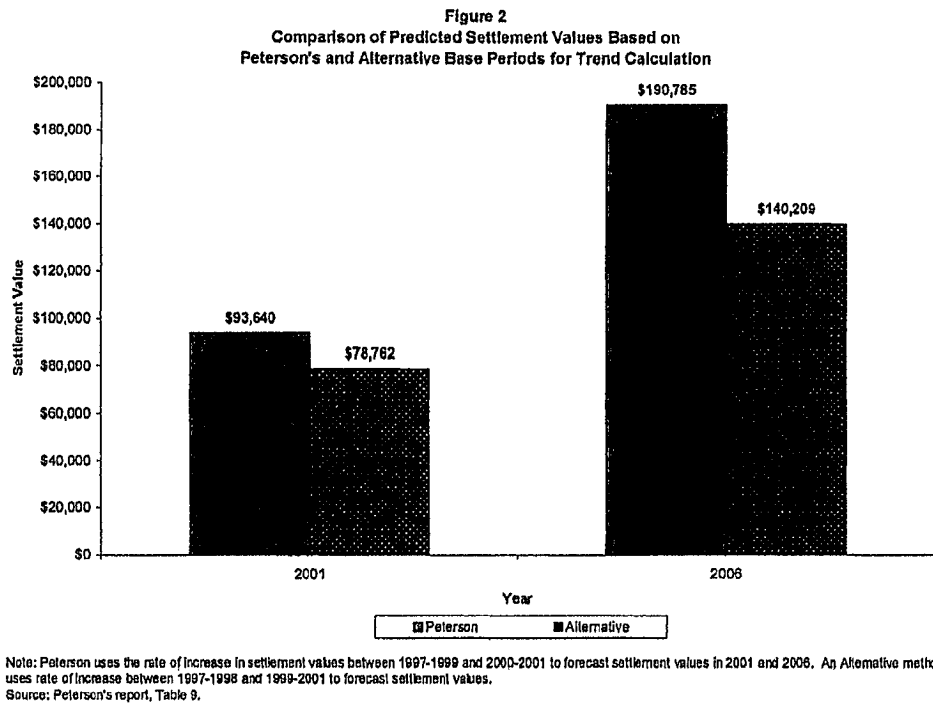
claims filed against Grace fell by 37 percent between 1996 and 1998 and the number of nonmalignant claims declined by 47 percent in the same period.

42. Similarly, there have been wide variations in past settlement values paid by Grace. For example, the settlement values for lung cancer increased by 115 percent between 1995 and 2000 (see Table 2), but declined by 67 percent between 1990 and 1995. Nonmalignant settlement values rose by 52 percent between 1995 and 2000, and fell by 52 percent during 1990-1995.

43. These observed swings in settlement values and the number of claims filed against Grace suggest profound changes in the underlying processes generating these outcomes within this short time period. For example, changes in the levels of claim filing could be related to endogenous changes in claimants' and Grace's incentive to litigate a claim. Dr. Peterson fails to explain or model these changes and, as a result, cannot support why his chosen time period is appropriate for his extrapolation method.

44. Given these sizeable variations in settlement values across years, Dr. Peterson's calculation of the rate of increase in settlement values for his "Short-Term Grace Ratios" scenario is highly sensitive to his choice of time periods. For example, using the rate of increase in average settlement values between 1997-1999 and 2000-2001 Dr. Peterson projects that mesothelioma settlement values will increase from \$93,640 to \$190,785 between 2001 and 2006 (Peterson report, Table 14). If, instead, Dr. Peterson used the rate of increase in settlement values between 1997-1998 and 1999-2001, his projected settlement values for mesothelioma would range from \$78,762 in 2001 (a decrease of roughly 16% in his estimate) to \$140,209 in 2006 (a decrease of roughly 27% in his

estimate). (See Figure 2). Therefore, not only does Dr. Peterson fail to explain why his chosen period is the appropriate benchmark, but his estimates appear highly sensitive to his arbitrary assumptions.



2. Dr. Peterson's Analysis Does Not Take into Account Structural Breaks

45. Forecasts based on simple extrapolation methods will be misleading during times of structural change in the underlying relationships. Of particular significance here, recent changes in the litigation environment likely alter the structural relationships that determine settlement values.

46. As Dr. Peterson himself acknowledges, many courts and defendants now scrutinize the medical evidence more closely than they did in the past and many important state jurisdictions have changed their tort laws to discourage mass filings,

impose limits on non-economic damages, and make their courts less hospitable to non-resident plaintiffs. This momentous change in asbestos litigation environment will likely change the incentive to litigate a claim going forward. Yet Dr. Peterson chooses to estimate the number of future claims and claim values based on forecasting methods that do not allow for such structural changes.

47. Dr. Peterson's "Long-Term Grace Regression" scenario estimates settlement values as a function of a linear time trend and dummy variables for states (i.e. individual state-specific effects), and uses the estimated trend coefficients from his regression to simply extrapolate future settlement values. This linear-trend model may accurately predict future values in the short run under special circumstances, but without understanding the underlying relationships driving outcomes these would not be sound predictions for long-run claim values. Extrapolation would only accurately predict Grace's short-run claim values if: (1) Grace's settlement values displayed well-established trends in the past; and (2) the structure of those well-established trends is not expected to change going forward. Neither of these appears to be appropriate assumptions in this context. First, as illustrated above, there are wide fluctuations in past settlement values indicating the absence of a well-established trend. Second, the recent changes in the asbestos litigation environment suggest a fundamental structural change in the relationship between settlement values and time-trend – as even Dr. Peterson appears to recognize. (Peterson Report, p. 12)

48. Furthermore, when extrapolating the future settlement values for 2001 through 2006, Dr. Peterson implicitly assumes that the distribution of claims across states that

was observed during 1999 to 2001 will continue to hold for every future predicted year. Given that a number of states have adopted state tort reform in the early 2000's, it is likely that the distribution of claims across states will look very different from those observed during 1999-2001.¹³

49. For example, a simple test of structural change based on Dr. Peterson's own regression confirms the existence of at least one structural break in settlement values.¹⁴ Furthermore, because several states have adopted tort reforms in the early 2000's, one would expect additional structural changes going forward. The fact that Dr. Peterson's regression does not take into account structural changes in settlement values renders his estimates based on "Long-Term Grace Regression" scenario unreliable.

3. Dr. Peterson Forecasts from a Period Immediately Preceding Grace's Bankruptcy with Unusual Settlement and Claim Values

50. Dr. Peterson's stated goal is to forecast particular outcomes (Grace's future claims and settlements values) had Grace *not* filed for bankruptcy.¹⁵ Dr. Peterson asserts that he seeks to "avoid and attempt to adjust for artificial events . . . which affect litigation in ways that do not occur and would not recur in the ordinary tort litigation of the defendant's asbestos law suits" (Peterson Report, p. 9). Yet Dr. Peterson provides no evidence that forecasting from a period *immediately preceding Grace's bankruptcy* generates reasonable predictions of what would have happened in the absence of Grace's

¹³ See, e.g., American Tort Reform Association, www.atra.org and CBO (2004).

¹⁴ Specifically, a Chow test for structural breaks finds a statistically significant finding in 1999 at the one percent level. See Gregory C. Chow (1960) and Johnston and Dinardo (1996).

¹⁵ Dr. Peterson states that his "estimation looks at how a debtor would continue to receive and resolve claims within the U.S. court system instead of within the protections of Chapter 11." (Peterson Report, p. 9)

bankruptcy, or that Grace's bankruptcy did not "affect litigation in ways that do not occur and would not recur" in ordinary circumstances.

51. Evidence suggests that claimants anticipated Grace's 2001 bankruptcy and resulted in an acceleration in claims filed immediately preceding the bankruptcy.¹⁶ Indeed, Dr. Peterson himself notes that "During the three months in 2001 to the time of its April 2, 2001 bankruptcy petition, Grace received 33,653 claims, 37 % more claims in three months than in all twelve months of 1999. Its annualized rate of 2001 filings was up almost 50 percent over 2000 [under conservative assumptions]" (Peterson Report, p.5). Dr. Peterson never investigates why filings were so high, or what this might indicate about the influence of Grace's impending bankruptcy, or – most importantly – whether extrapolating from such a period is likely to produce reliable forecasts. Again, Dr. Peterson fails to address this issue or provide evidence of whether he has chosen the appropriate period from which to base his forecasts.

B. Dr. Peterson Uses Unsound Benchmarks From Which He Projects Future Claim Levels And Their Settlement Values

52. Dr. Peterson uses unsound and arbitrary benchmarks to project Grace's claims and settlement values. First, when projecting future claiming behavior against Grace, Dr. Peterson assumes that the propensity to sue Grace between 2000 and 2006 will increase at exactly the same rate as experienced by the Manville Trust during the same period. Second, when projecting Grace's future settlement values, Dr. Peterson uses settlement values paid by other asbestos defendants. As I discuss below, both these assumptions,

¹⁶ See, e.g., Biggs Report, p. 41 and "WR Grace CEO: Mulling Chapter 11 as Asbestos Suits Mount" *The Wall Street Journal*, Jan. 29, 2001.

using data from the Manville Trust and other asbestos defendants, constitute poor benchmarks from which to project Grace's future claims and values of these claims.

1. Dr. Peterson Arbitrarily Uses Claiming Behavior against the Manville Trust As a Benchmark for Future Claims Against Grace

53. Dr. Peterson assumes that the propensity to sue Grace would have increased between 2000 and 2006 at the same rate actually experienced by the Manville Trust over that period.¹⁷ The Manville Trust administers funds to litigants *post-bankruptcy*, while Dr. Peterson's forecasts are intended to predict the number and value of asbestos-related claims against Grace brought about by litigation in the *absence of bankruptcy*. Dr. Peterson provides no evidence to support his implicit assumption that claiming behavior is unaffected by the prospect of bankruptcy; indeed, he does not even address the issue.

54. Similarly, Dr. Peterson does not address any potential increase in claims against the Manville Trust over the 2000-2006 period due to the bankruptcy filings of large asbestos manufacturers in 2000, an increase he claims Grace would have experienced.¹⁸ If Manville is an appropriate benchmark and he is estimating a but-for world without a Grace bankruptcy, he must estimate the effect from Grace's bankruptcy on Manville claims and adjust the rate of increase in Manville claims from 2000 to 2006 accordingly. Instead, if Dr. Peterson believes that Manville did not experience this spill-over effect from other bankruptcies, as he claims Grace would have, then claiming behavior against the Manville Trust would not be representative of Grace's future experience (according to

¹⁷ Dr. Peterson states that "we use asbestos claims data from the Manville Trust to understand trends in asbestos claims filings since Grace's April 2, 2001 petition date and to forecast claims that would have been filed against Grace since that date." (Peterson Report, p. 42)

¹⁸ Dr. Peterson argues that because of eight so called top-tier asbestos defendants' declaration of bankruptcies in 2000 and 2001, "both claims against Grace and the amount that it would have had to pay to resolve asbestos claims would have increased greatly." (Peterson Report, pp. 25-26)

his own logic). Either way, the rate of increase in claims against the Manville Trust does not provide a reliable basis from which to infer the rate of increase in claims against Grace.

2. Dr. Peterson Uses Three Asbestos Manufacturers as Benchmarks for Forecasting Future Settlement Values with No Empirical or Theoretical Basis.

55. Dr. Peterson assumes that the settlement values paid in 2001 by firms he claims are “comparable” asbestos companies – USG, Quigley, and T&N – provide a reliable basis for forecasting the settlement values Grace would have paid in 2006, but provides no reliable evidence to support these comparisons.¹⁹ Dr. Peterson fails to show that the size, mix of products sold, mix of customers, mix of plaintiff types and illnesses, or even the simple trends in litigation experienced by any of these companies, are sufficiently similar to Grace’s to justify using the settlement values of these companies to forecast for Grace.²⁰ Instead, Dr. Peterson arbitrarily argues that “until its bankruptcy, Grace’s increasing settlement costs closely tracked the trends for other defendants” (Peterson report, p. 27).

56. Contrary to Dr. Peterson’s assertion, there is much variation in the levels and trends in settlement values paid by Grace and these “comparable” companies (see Table 3). For example, Grace paid an average of \$63,774 for a mesothelioma claim in 1998, whereas USG, Quigley, and T&N paid on average \$36,072, \$20,927, and \$50,812,

¹⁹ Dr. Peterson states “To estimate the amounts by which Grace’s settlement payments would have increased since its petition date, we use settlement data for three comparable co-defendants: USG, Quigley, and Turner & Newall.” (Peterson Report, p.42)

²⁰ The extent of Dr. Peterson’s analysis of the comparability of these firms to Grace in his report is the following statement: “While there are differences between Grace and each of these defendants, T&N and USG in particular are good comparisons for Grace. All three companies manufactured and sold asbestos-containing construction products. Both T&N and Grace were dominant manufacturers of widely-used spray insulation and each sold a wide range of other asbestos-containing products.” (Peterson Report, p. 30)

respectively. In 2001, Grace paid an average of \$97,839 for a mesothelioma claim, whereas USG, Quigley, and T&N paid averages of \$221,745, \$188,031, and \$194,051, respectively. Thus, depending upon the year, these companies' mesothelioma settlement values are either much higher or much smaller than those paid by Grace. Specifically, in 1998, Quigley's mesothelioma settlement value is roughly 67 percent smaller than Grace's mesothelioma settlement value, whereas, in 2001, USG's average mesothelioma settlement value is roughly 127 percent higher than that of Grace.

57. Furthermore, the trends have also varied across companies. For instance, between 1996 and 2001, Grace's settlement value for mesothelioma increased by roughly 256 percent. However, during the same time period, settlement values increased by roughly 917 percent for USG, 838 percent for Quigley and 478 percent for T&N.

58. Dr. Peterson provides no support as to why these three companies are appropriate benchmarks. First, the variations in levels and trends in settlement values paid by Grace as compared to these other firms indicates that historically these firms were not comparable to Grace. Second, Dr. Peterson provides no evidence as to why, going forward, these companies are reliable benchmarks. Therefore, his projected settlement values from these analyses are unreliable. Additionally, even if other firms' claim values were comparable to those of Grace, there is no scientific basis for Dr. Peterson's assumption that in 2006 Grace would pay claim values paid by other defendants as of 2001.

C. Dr. Peterson Employs Additional Unsound Assumptions and Adjustments with No Empirical Basis

59. Dr. Peterson's applies additional unsound assumptions and adjustments in his estimation of Grace's future claims and claim values. First, Dr. Peterson assumes the rate of change in nonmalignant claims will exactly mirror the rate of change in cancer

incidence. Second, he makes arbitrary adjustments when taking into account the effect of tort reforms.

1. Dr. Peterson Assumes the Rate of Change in Nonmalignant Claims Filed Against Grace Will Mirror the Rate of Change in Cancer Incidence

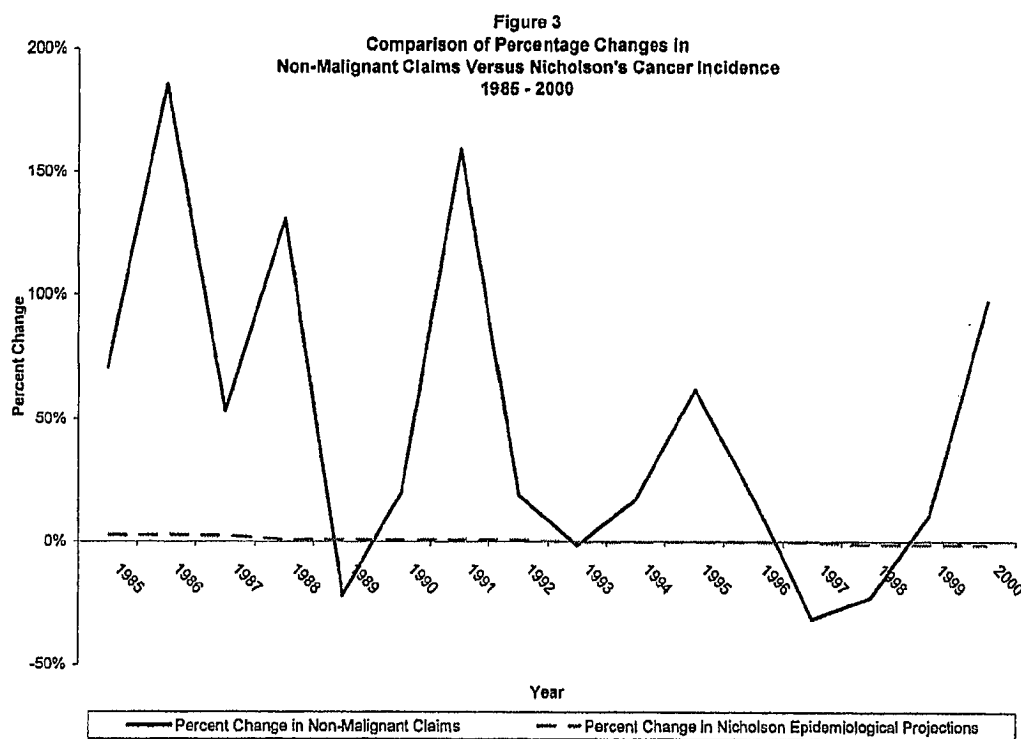
60. Dr. Peterson assumes that the rate of change in nonmalignant claims filed against Grace will exactly mirror the rate of change in cancer incidence even though he admits that the “disease processes for asbestos-related cancers and asbestos-related nonmalignant diseases differ” (Peterson Report, p. 79). Dr. Peterson argues that claims against Grace and other defendants across past years reveal a stable relationship between the number of cancer claim filings and nonmalignant claim filings. However, he admits that the “recent changes in the litigation environment have disturbed this historical stability between cancer and nonmalignant filings.” (Peterson report, p. 81).

61. As a response to this break in the historical trend, Dr. Peterson assumes that the rate of change in Nicholson’s incidence of cancers is an appropriate predictor of the change in the number of nonmalignant claims. Again, Dr. Peterson provides no support as to why the underlying processes generating nonmalignant claims and the epidemiology of cancer incidence are related.

62. In using the change in cancer incidence to predict nonmalignant filings, Dr. Peterson is implicitly employing a purely epidemiological process as a benchmark for that driven by both epidemiology and human behavior. To the extent some of the nonmalignant claims are fraudulent (or have lacked a sound medical basis), Dr. Peterson’s method essentially forecasts this behavior using cancer rates without providing any support as to why an epidemiological process provides a reliable basis from which to draw conclusions regarding the decision to commit fraud.²¹

²¹ For a discussion on baseless claims, see expert report of Dr. Dunbar, pp. 13-46, June 2007.

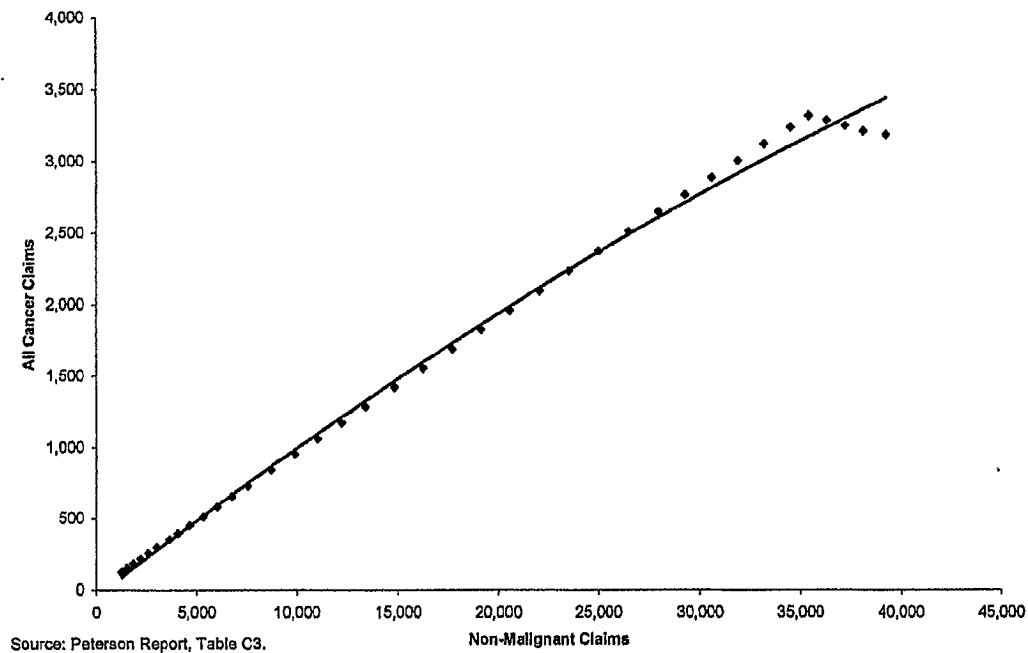
63. The act of bringing a claim when there is no actual medical condition arising from the alleged harmful agent is entirely a function of human behavior, controlled by the sorts of incentives and costs as discussed previously. Epidemiology, which models biological processes such as disease, does not capture human strategic behavior, and it makes no sense to use an epidemiological model (and here, of a different disease than that being examined) to project fraudulent and medically-baseless claims. Yet this is exactly what Dr. Peterson does without logical explanation or justification. In fact, the historical rate of change in cancer incidence was a poor predictor of the rate of change in non-malignant claims. (See Figure 3).



Source: Peterson Report, Table 29 and Table C1.

64. Moreover, while Dr. Peterson's revised method for projecting future non-malignant claims based on cancer incidence (as opposed to cancer claim filings) was supposed to account for his assertion that the historical ratio of nonmalignant claim filings to cancer claim filings has recently been disturbed, it does not. A simple ratio of Dr. Peterson's projected non-malignant claims and projected cancer claims in this matter exhibits exactly the stable relationship that he claims has been disrupted. (See Table 4). Graphically, this can be seen by plotting Dr. Peterson's predicted number of cancer claims and non-malignant claims. (See Figure 4).

Figure 4
Peterson's Predicted Number of Cancer and Non-Malignant Claims
2002-2039



2. Dr. Peterson Employs Arbitrary Adjustments To Account For The Effect of Tort Reform.

65. Although Dr. Peterson recognizes the importance of tort reform to his forecasts (see, e.g., Peterson, p. 12), he incorporates tort reform into his analysis in arbitrary, and potentially unreasonable, ways. Dr. Peterson acknowledges that tort reform will likely reduce the overall amount of asbestos litigation, and thus the number of asbestos claims that Grace would face.²² Rather than modeling this process to determine the magnitude of this reduction, Dr. Peterson simply makes *ad hoc* assumptions such as “Grace’s nonmalignant claim filings would have been 30 percent below its pre-petition (2000-2001) levels” (Peterson, p. ES-2). However, Dr. Peterson provides no evidence to support the validity of these assumptions.

66. Second, Dr. Peterson makes no adjustment to Grace’s claim values despite existing empirical evidence demonstrating that tort reform reduces claim values. For example, as discussed in Browne and Puelz (1999), Appendix B, the authors find that caps on non-economic damages reduce litigated values by 13 to 19 percent. Dr. Peterson ignores such findings, and instead assumes that claim values will be completely unaffected by tort reform. To defend this assumption, Dr. Peterson argues that tort reforms, by culling out the weakest claims, could actually be expected to increase the average value of remaining claims that survive dismissal. This argument conflates two ideas that have not been proven to be directly related: the value of the claim and the standard of medical proof. Most importantly, this issue illustrates what Dr. Peterson

²² Dr. Peterson states “we must adjust our analyses to reflect changes that have occurred in the litigation environment during the six years since Grace’s petition date” (Peterson Report, p. 12).

should have, but did not, do. Having formulated an hypothesis, Dr. Peterson failed to create a model and test it on the data.²³

67. Therefore, Dr. Peterson applies *ad hoc* and arbitrary adjustments to his estimates of Grace's future claims as a means of accounting for the effect of tort reform without providing any evidence of their validity. As a result, his forecasts are unreliable, and likely (given his assumption that tort reform will not affect claim values) overstate Grace's asbestos future asbestos-related claim payments.

D. Dr. Peterson Fails to Perform True (Or Useful) Sensitivity Analyses.

68. Dr. Peterson titles Section 7 of his report, "Sensitivity Analyses." The purpose of a sensitivity analysis is to determine whether forecast results hold when crucial assumptions are altered; for example, assumptions about which factors are important, how basic relationships between factors should be estimated, and so forth. If one finds that changes in crucial assumptions produce only small changes in the forecasts – i.e., the forecasts are not "sensitive" to any particular assumption – one can be more confident in the reliability of the forecasts.

69. Dr. Peterson's "sensitivity analyses" are not sensitivity tests at all, as his tests involve altering only a small set of assumptions (the "adjustments" he had made in an *ad hoc* fashion). Therefore, Dr. Peterson fails to employ any methodology to justify his estimation approach or empirically verify his assumptions. As a result, he does not rigorously test his methodology. As stated previously, Dr. Peterson is extrapolating over a potentially unrepresentative period and ignoring endogenous relationships. Dr.

²³ In fact, when Browne and Puelz investigated the impact of various types of tort reforms on average claim values, they found that the final settlement values either increased or decreased depending on the nature of the reform.

Peterson fails to address the question of how his forecast changes if he uses an earlier or longer time period, or how his results would change if endogeneity were properly accounted for.

70. Once again, Dr. Peterson's basic problem is that he fails to develop an underlying model. Without an underlying model of the process by which asbestos claims and claim values are generated, he cannot conduct a true sensitivity analysis – he has no basis from which to proceed. Because he has not specified which factors matter and how they matter, he cannot analyze the effect of treating them differently; for example, allowing them to change at different rates, or altering the nature of the assumed relationships among (or between) factors and his outcomes of interest (litigation rates, propensity to sue, settlement values).

71. Sensitivity analysis requires an understanding of the basic mechanism determining the outcomes – when one has that understanding, one can construct appropriate tests. For example, one can establish a true confidence interval, which reflects the statistical uncertainty of a given forecast. Dr. Peterson can not calculate any confidence intervals, but instead provides a simple range of possible forecasts resulting from the arbitrary alteration of arbitrary assumptions. However, he is unable to choose among them, as none are derived from an underlying causal structure that would provide the basis for a rigorously justified, or “scientific” model.

E. Dr. Peterson Arbitrarily Claims His Forecasts Are Both Conservative And Robust

72. Throughout his report, Dr. Peterson claims his estimates are conservative. For example, in his executive summary, Dr. Peterson writes, “Our forecasts are based on

conservative assumptions and analyses that are more likely to underestimate, rather than overestimate, Grace's liabilities" (Peterson Report, p. ES-2). Similarly, Dr. Peterson writes, "we forecast such steep drops [from 2001 levels in claims paid by Grace] out of conservatism, to assure we do not overestimate the number of claims that Grace will now pay" (Peterson Report, p. 85). However, Dr. Peterson appears to use the word "conservative" merely to signify "less than 2001 levels." There is nothing inherently conservative about forecasting "steep drops" from 2001 levels, given that 2001 saw the highest number of claims and settlement values in Grace's history.

73. Dr. Peterson asserts that he is being conservative merely because he assumes that certain historic trends will not continue into the future (e.g., Peterson report, p. 21 and p.70). But since Dr. Peterson fails to account for the processes that generated the historic trends, it is impossible to judge whether his ostensibly conservative assumptions are truly conservative.

74. Dr. Peterson further asserts that his estimates are robust. In his report, Dr. Peterson presents his forecasted settlement amounts and writes of "the close correspondence among these forecasts that are based on three different methods – multiple regression, extrapolation from Grace's recent history, and comparisons to payments made by three different co-defendants—and data from four different defendants. This close correspondence provides assurance about the robustness of each of the forecasts" (Peterson Report, p. 37). In fact, the "close correspondence" among the forecasts tells us nothing about how robust the forecasts are to changes in important assumptions, which is what robustness tests typically are intended to demonstrate. The

mere fact that alternative scenarios based on arbitrary assumptions yield close results does not mean the results are robust or reliable.

F. Dr. Peterson's Faulty Methods Render His Forecasts Unreliable and Uninformative.

75. Dr. Peterson does not provide a well-specified model explaining the underlying factors and processes that generate the outcomes (claim levels and settlement values) that he is trying to predict. Had Dr. Peterson identified the determinants driving these outcomes, he could appropriately model any observed changes in the environment in which he is forecasting and accurately adjust for their effects (e.g. the effect of tort reform). Instead, Dr. Peterson employs a simple extrapolation method and, as a result, applies arbitrary assumptions and adjustments to his estimates to account for these observed changing factors. Finally, despite his claims, Dr. Peterson does not provide sufficient evidence that his estimates are either conservative or robust. These unsupported adjustments and assumptions highlight the inherent flaws in his methodology and provide additional reasons why his forecasts for Grace's future asbestos claims and claim values are unreliable and uninformative.

76. Lastly, the nature of Dr. Peterson's calculations – which build on each other in a cumulative fashion – means any bias imparted by one assumption is magnified by biases in others when the biases work in the same direction. As a result, an even larger bias is transmitted in the final forecasts than the biases that these individual assumptions would imply.

V. MS. BIGGS' ANALYSES ALSO FAILS TO PROVIDE RELIABLE ESTIMATES OF GRACE'S FUTURE CLAIMS OR CLAIM VALUES

77. In her report, Ms. Biggs attempts to estimate the number and value of Grace's future asbestos-related claims under the assumption they would be filed and settled in state tort courts. Ms. Biggs' report is not well documented and thus unclear on certain fundamental points underlying her estimation procedure. This itself runs counter to the application of scientific method, which requires explicit documentation such that analysts can understand and replicate the analysis. As a result, it is difficult to provide a comprehensive opinion of such a poorly documented analysis.

78. The analysis that is explicitly set out appears to suffer from many of the same flaws as found in Dr. Peterson's report. Of crucial significance, the starting point of Ms. Biggs' estimation is a projection of the total number of asbestos claims in the United States (against all defendants), that was based in part on projections by other parties and which Ms. Biggs extrapolated forward in an unprincipled fashion. Like Dr. Peterson, Ms. Biggs appears not to model this system and instead uses a forecasting methodology based on unjustified "judgments" and simple extrapolation of past outcomes.

79. Since the environment for which she is projecting is changing, something a basic extrapolation method cannot accommodate, Ms. Biggs must take account for the effect of these changes. As a result, like Dr. Peterson, Ms. Biggs employs arbitrary assumptions and ad hoc adjustments in her estimation. Therefore, although her calculations differ at points from Dr. Peterson, Ms. Biggs' estimation methods suffer from the same fundamental flaws.

A. Ms. Biggs Employs a Simple Extrapolation Using Arbitrary Base Values

80. As discussed in this report, claim levels and settlement values are outcomes determined by human behavior as well as certain external variables. Ms. Biggs does not model the underlying processes and factors driving these outcomes, but instead employs a simple extrapolation method using recent Grace data. For example, to project Grace's future asbestos claims filings, Ms. Biggs uses the average "propensity to sue" Grace ("Grace's share") from 1997 to 2001, calculated as the number of Grace's historical claim levels during this period as a fraction of her estimated total claims filed in asbestos litigation, by state (Biggs Report, p. 49). Ms. Biggs provides no evidence, or underlying theoretical support, that this specific average is an accurate measure of the propensity to sue Grace in the future. Furthermore, she provides no justification as to why this metric will remain constant in the changing future environment.

81. Similarly, to project future average settlement values, Ms. Biggs considers several alternative average settlement values based on various historical group of years. She arbitrarily chooses a base value calculated as the 1998-2001 trended average settlement value paid by Grace even though she recognizes "that the averages [based on 1998-2001] are highest for this group of years" (Biggs Report, p. 60). She argues that the "1998 – 2001 trended averages are a reasonable base for future average payments, given that I have made no explicit adjustments for several factors that can reasonably be expected to have placed additional upward pressure on Grace's future settlement amounts" (Biggs Report, pp. 60-61). However, she provides no empirical evidence to